

U.S. Application No.: 10/539,942  
Amendment A  
Reply to Office Action dated 09/18/2008

Attorney Docket No: 3926-184

**IN THE FIGURES:**

The figure is replaced with a figure with good line quality and reference numbering.

The replacement sheet is attached to this amendment.

## **REMARKS**

### **Status of Claims**

In view of the numerous changes needed to conform the as-filed translated European format claims to US format, original claims 1-5 have been canceled and new claims 6-11 added, paralleling the original claims except that claim 7 is new. Support for new claim 7 can be found in original claim 5, last three lines. Care has been taken to ensure that no new matter is added by these amendments.

### **Drawings**

The drawings are objected to because the line quality of the reference characters is uneven and poor.

In response, Applicants submit herewith a replacement drawing sheet with good line quality and reference characters.

### **Abstract**

The abstract of the disclosure is objected to because it is not concise, is too long, and contains the phrase "The invention relates to".

A replacement Abstract is submitted herewith.

### **Specification**

The disclosure is objected to because it contains references to specific claims such as "in accordance with the preamble of patent claim 1", paragraph [0002] and "this object is achieved by the features of patent claim 1", paragraph [0005], which should be cancelled from the specification.

The specification has been amended.

Further, according to the Examiner, the specification contains numerous occurrences of terminology which is unclear and not art-accepted (i.e., a "3/2-way valve" in paragraph [0008], a

"2/2-way valve" also in paragraph [0008], and a "4/2-way valve" in paragraph [0009]), which should be replaced with the proper corresponding art-accepted terminology.

In response, Applicants respectfully traverse. At least 170 US Patents have issued with the term "3/2 way valve" in the claims. US Patent 6,874,476 is in fact titled "3/2-WAY VALVE".

Accordingly, it is submitted that this terminology is art accepted.

#### **Claim Rejections - 35 U.S.C. § 112**

Claims 1 through 5 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are generally narrative, written in a run-on fashion, and indefinite, failing to conform with current practice. They appear to be a literal translation into English from a foreign document and contain grammatical and idiomatic errors.

It is respectfully submitted that the new claims, paralleling the original claims but now in US format, comply with 35 U.S.C. §112, second paragraph.

#### **Claim Rejections - 35 U.S.C. §§ 102**

As best can be understood in view of the indefiniteness of the claims, claims 1 through 5 are rejected under 35 U.S.C. §102(b) as being anticipated by Takano et al (made of record via IDS).

According to the Examiner, Takano et al. discloses a method for air conditioning a motor vehicle including, for example: in a heating mode, heating the passenger compartment of the vehicle through heat pump operation of a refrigerating circuit comprising a compressor (10), a condenser (14), a throttle valve (16), an evaporator (18) readable on the passenger compartment heat exchanger as recited in the claims of the instant application; the temperature compartment temperature and the humidity being recorded by measurement technology or various sensors connected to ECU (26) as shown in Figure 13; the mass flow of refrigerant being throttled in order to control fogging of the windows; and, the passenger compartment being heated by an

outside heat source or heating heat exchanger (24) which is operably connected with the engine cooling circuit of the engine (12).

Applicants respectfully traverse.

Similar to the present invention, Takano et al relate to a vehicle air conditioner that inhibits re-evaporation of condensed water on the surface of an evaporator that might fog the inner surface of the vehicle windshield during operation of a hot gas heating cycle heating mode.

However, when Takano et al determined during operation of the heating mode that the windshield will fog, Takano et al interrupt operation of the air conditioning compressor by the air conditioning control unit so that the temperature of an evaporator reaches no more than a predetermined value.

The disadvantage of the system of Takano et al is that, as a result of exercising control by interrupting operation of the compressor (21), the hot gas coolant (or the superheated gas coolant) that has already been discharged from the compressor (10) continues to pass through the second solenoid valve (21), and the throttle (21a), until it flows into the evaporator (18), releasing residual heat which will evaporate condensed water on the surface of the evaporator. This residual heat which is allowed to continue to evaporator (18) will allow fogging to occur. See Takano et al col. 6, line 40-42:

In the presently-described embodiment, the capacity of the hot gas cycle heating mode is controlled by interrupting the compressor 10 based on the discharge pressure Pd of the compressor 10" (*discussing normal operation*)

and col. 7, lines 17-26:

In the heating mode, the action of the compressor 10 is thus controlled to control the evaporator temperature, as will be summarized in the following.

$$0^{\circ}\text{C} \leq \text{Ambient Temperature} \leq 10^{\circ}\text{C}$$

At this time, the action of the compressor 10 is so controlled at Steps S180, S190 and S200 so that the evaporator temperature may be at the ambient temperature +5° C. As a result, it is possible for the following reasons to prevent the windshield from fogging. (*discussing prevention of fogging*)

The present inventors, in contrast, determined that fogging of a windshield occurs rather quickly, and accordingly it is necessary to stop or prevent this heat transfer to the condensed water on the evaporator as rapidly as possible. Thus, upon detection of a condition in which fogging is possible, steps have to be taken rapidly to prevent fogging.

In the present invention accomplishes this rapid intervention by regulating throttle valve (4) to throttle the mass flow of refrigerant in the circuit upstream of the passenger compartment heat exchanger (5), in such a manner that the moisture contained in the air stream passing the passenger compartment heat exchanger (5) is at least substantially condensed at the passenger compartment heat exchanger (5), and the moisture which has already condensed at the heat exchanger (5) remains at the heat exchanger (5). At this time the passenger compartment is heated by a heat source which is outside the circuit (1) until the temperature in the passenger compartment exceeds an upper limit temperature of the predefined range. See the specification, paragraph [00011] and claim 6: "the throttle valve (4) is controlled by signals from the temperature and humidity sensors ...".

There is no mention that Takano et al throttle (21a) can be used to control the mass flow of refrigerant. Takano et al in fact disclose that the throttle 21a can be constructed of a fixed throttle such as an orifice or capillary tube. Such a fixed throttle precludes operation according to present claim 6.

Further, claim 6 as amended concludes with the recitation "heating the passenger compartment by a heat source which is outside the circuit (1) until the temperature in the passenger compartment exceeds an upper limit temperature of the predefined range". Takano does not teach a heat source located outside the refrigerating circuit of the air conditioning, which heats the compartment during throttling of the mass flow of the refrigerant.

Accordingly, claim 6 is not anticipated by Takano et al. The remaining claims being dependent from claim 6, all claims are considered in condition for allowance.

Finally, Applicants respectfully submit that the following claims are separately patentable over Takano et al:

- claim 9 (heating, prior to throttling the mass flow of refrigerant in the refrigerating

circuit (1), both the refrigerant and the engine coolant by means of the compressor (2), which acts in the heat pump, of the refrigerating circuit (1), with heat being removed from the refrigerating circuit (1) via a countercurrent heat exchanger (23) and transferred to the engine coolant);

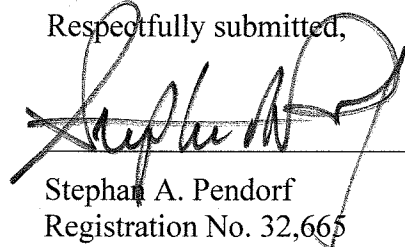
- claim 10 (wherein the heat is transferred only to the engine coolant of a first section (14) of the engine cooling circuit (12), which first section (14) includes a heating pump (22) and the heating heat exchanger (24), and wherein a second circuit section (13) of the engine cooling circuit (12), which includes the engine (16) and the radiator (17), are fluidically decoupled from the first circuit section (14)), and

- claim 11 (wherein during heating, the air-conditioning system is switched to recirculated air, the refrigerant releasing its heat in the countercurrent heat exchanger (23) and being throttled in the throttle valve (4) to a pressure which correlates with a temperature such that the temperature at the surface of the passenger compartment heat exchanger (5) is below the dewpoint temperature which leads to fogging of the windows).

Favorable consideration and early issuance of the Notice of Allowance are respectfully requested. **Should further issues remain prior to allowance, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number.**

Patent Central LLC  
1401 Hollywood Blvd.  
Hollywood, FL 33020-5237  
(954) 922-7315

Respectfully submitted,



Stephan A. Pendorf  
Registration No. 32,665

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